



TROWAL CUTLERY CLEANING TECHNOLOGY

With the HTS system

A COMMON PROBLEM

The cleaning of dirty cutlery, after it has been used, requires a lot of time and manpower and can be quite costly. This is especially true if the cutlery is covered with baked-on food leftovers. With conventional dishwashing systems perfectly clean and spot-free results can often not be achieved at all, or only at very high costs.



Post-cleaning rinse section

AN INNOVATIVE SOLUTION

Walther Trowal, who has been providing innovative surface finishing solutions for more than 90 years, recently developed the HTS cleaning system (Hydro-mechanical, Three-Stage process). In one single operation the HTS system



› cleans



› rinses and



› dries

The HTS system gently cleans the cutlery using very little energy and cleaning compound. The time consuming and labor-intensive pretreatment of the cutlery, for example, the manual pre-soaking, is no longer necessary. Likewise, the manual polishing has also been eliminated. The cutlery cleaning system, model BRA, even gets rid of difficult-to-remove contaminants and erases light rust.

The HTS system also takes off oxide layers from silver cutlery, thus eliminating the tedious manual polishing. In addition, the metal is temporarily protected against oxidation and discoloring.

THAT IS HOW THE HTS SYSTEM WORKS

1. Stage: Pre-soaking/cleaning

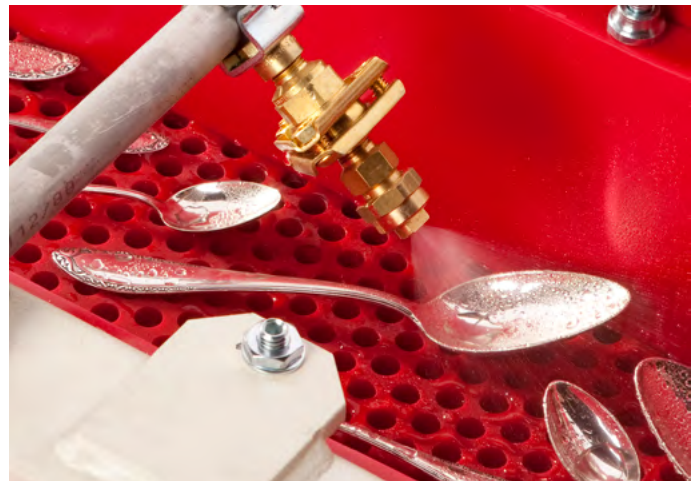
The soiled cutlery, along with accessories like ladles or serving tongues, is randomly loaded into the vibrating processing bowl without any pre-treatment. The bowl is filled with porcelain polishing media that was specially developed for cutlery cleaning.

The induced vibration causes the cutlery pieces and the porcelain media to constantly “rub” against each other. This rubbing action removes the food leftovers and other contaminants, which are then flushed out of the machine with the rinse water through special screens in the bottom of the processing bowl.



2. STAGE: RINSING

The cleaned and pre-polished cutlery pieces are then transferred to the post-cleaning rinse section, where they are rinsed with fresh water. Depending on the machine type, this can take place in semi-automatic mode or fully automatically. The post-cleaning rinse operation safely removes even the tiniest contaminants and ensures that the cutlery is perfectly clean and complies with the prevailing sanitary standards.



3. STAGE: SPOT-FREE DRYING

After the rinsing operation the wet cutlery is transferred from the rinse station to the vibratory cutlery drier. This machine is filled with heated, dust-free and sanitary drying medium, type GTM 300. Here the cutlery is gently dried without any residual water spots. The drying medium has a temperature of at least 65 °C. This guarantees absolutely sanitary drying conditions. The cutlery is now ready for its next use.



SANITARY CONDITIONS

The leftovers carried into the cleaning system with the dirty cutlery are pulverized by the porcelain media and completely discharged from the machine with the water and cleaning compound. After the cleaning/drying operation you will have shiny and germ-free cutlery that can be immediately re-used without the need for any post-treatment whatsoever.

The sanitary results of the BRA model range are well within the limits of **DIN standard 10510:2013-10**

THE COST SAVINGS ACHIEVED WITH THE HTS SYSTEM

The "Sinner" circular diagram describes four parameters that determine the success of a cleaning operation:



1. The chemical cleaning agents to remove the food leftovers



3. The temperature of the cleaning media



2. The mechanical action, i.e. the intensive contact between the cleaning media and the cutlery



4. The time period during which the cutlery pieces are exposed to the cleaning media

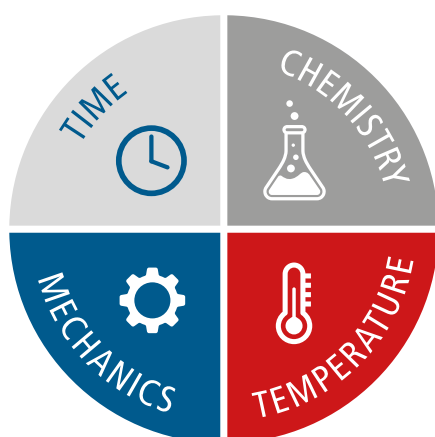
All four parameters in the circular diagram interact with each other. A single parameter cannot be changed without having to adjust the others. The sum of all parameters always amounts to 100%.

In the BRA cleaning systems the desired savings in energy consumption and use of cleaning compounds are achieved by the

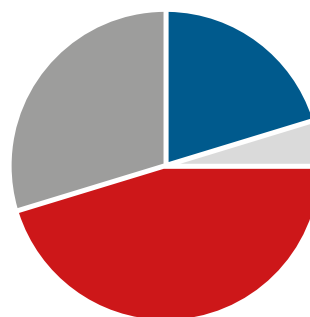
intensive but gentle mechanical "rubbing" action between the cutlery pieces and the cleaning media.

This means that the circle segments "energy input", "chemistry" and "time" are becoming smaller, whereas the segment "mechanical action" becomes bigger.

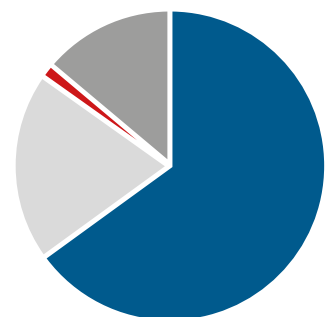
The result: Cost savings of up to 80% and more!!!



CONVENTIONAL
PROCESS



HTS
PROCESS



MECHANICS TIME TEMPERATURE CHEMISTRY



EQUIPMENT FEATURES

Processing bowl

The processing bowl, consisting of a sturdy weldment, is equipped with a lifetime-lubricated vibratory motor. The bowl is protected with a wear-resistant polyurethane lining that reliably protects the machine against sharp knives and pointed forks.



DRIER

The rotary vibratory drier is filled with maizorb (shredded corn cobs) that is heated to a temperature of over 65 °C. This ensures absolutely sanitary drying conditions. The wide processing channel allows the perfect and gentle drying of the cutlery in one single pass and ensures spot-free results without any residual contaminants.



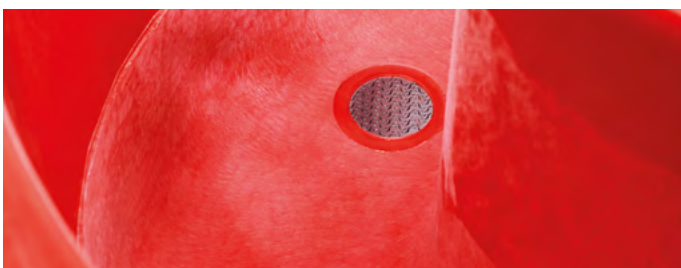
CONTROL PANEL

Our control panels are designed for easy, intuitive operation and are equipped with state-of-the-art components. With a frequency inverter the RPM of the vibratory motor can be precisely adapted to the required cleaning intensity for your cutlery.



DOSING OF CLEANING COMPOUND AND WATER

For perfect and economical cleaning results the electronic compound & water dosing system can be precisely adjusted to your needs. Depending on the water hardness, ambient temperature and the extent of food leftovers on your cutlery the amount of water and compound and the ratio between these two parameters can be individually adjusted.



BOTTOM SCREENS

Special screens in the bottom of the processing bowl allow the quick discharge of the compound/water mix contaminated with the removed food particles. The screen slots in "S" shape are created with a high-precision water jet system. Their conical design prevents the screens from getting clogged. This guarantees an absolutely safe and stable cleaning and rinsing process.

THE CONSUMABLES FOR THE HTS SYSTEM

COMPOUND BRS 20

This special cleaning compound is fully effective, even with cold water. A light warming of the process water to about 30 °C is ideal. This guarantees not only the optimal cleaning of your cutlery, but it also represents a significant cost saving: The process water must not be heated to a high temperature or specially treated.

Immediately after the cleaning operation with the sanitary trowaclean BRS 20 compound your cutlery can be safely re-used, because its surface contains no residual compound. However, to completely neutralize the cleaning compound, it is recommended to rinse the cutlery with fresh water and subsequently dry it.



DRYING MEDIUM GTM

The drying medium GTM-300 for the spot-free drying of cleaned and rinsed cutlery develops practically no dust and due to a special pre-treatment is germ-free. (DIN EN 1174, laboratory number 23036M068).

The drying granules have a defined size so that they cannot get wedged between the fork tines. The drying medium is supplied in practical plastic bags containing 18 kg – the optimal quantity for ergonomic replenishment of the cutlery drier with drying medium. Re-sealable bags protect the granules against moisture ingress and mechanical damage.



POLISHING MEDIUM BPS

A porcelain medium that can reach all surface areas on your cutlery and does not get wedged between the fork tines is ideal for cutlery cleaning.

The polishing medium BPS perfectly meets these requirements: Its composition, shape and size ensure the effective cleaning of the cutlery with minimal wear. An extra bonus is the polishing effect of this medium that is achieved with longer processing times.



BASIC DIMENSIONS CUTLERY CLEANING MACHINES

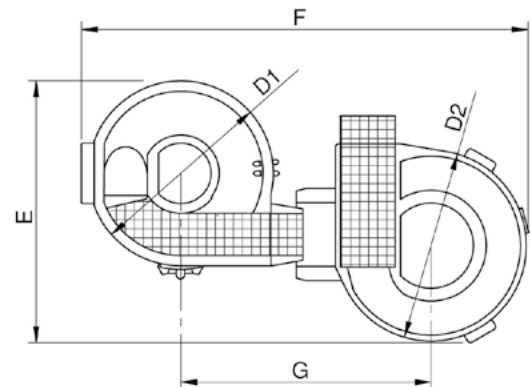
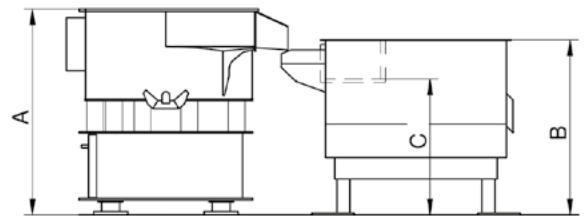
	BRA 900	BRA 1200	BRA 2500
A	1,044	1,294	1,520
B	886	1,100	1,270
C	680	855	975
D1	980	1,162	1,616
D2	978	1,198	1,652
E	1,390	1,840	2,525
F	2,350	2,921	3,910
G	1,250	1,700	2,250

TECHNICAL DATA

MODEL	BRA 900	BRA 1200	BRA 2500
Capacity (cutlery pieces/h)	1,300	2,200	5,500
CLEANING VIBRATOR	BRR 100	BRR 200	BRR 600
Fill rate porcelain media BPS	150 kg	250 kg	800 kg
Machine weight full	680 kg	1,100 kg	2,100 kg
Fresh water consumption l/h	75	90	300
Fresh water temperature	app. 20 °C	app. 20 °C	app. 20 °C
Usage of compound BRS 20	0.75 kg/h	0.8 kg/h	3.3 kg/h
DRIER WITH DRYING MEDIUM	BRR 100	BRR 200	BRR 600
Fill rate medium GTM 300	36 kg	54 kg	126 kg
Machine weight full	400 kg	650 kg	1,250 kg
Operating temperature	> 70 °C	> 70 °C	> 70 °C
Voltage	400 V/50 Hz	400 V/50 Hz	400 V/50 Hz
Connected electrical load	9 kVA/32 A	18 kVA/32 A	38 kVA/54 A
Total power consumption/h	4.5 kWh	8.4 kWh	21.9 kWh
Dia. of fresh water connection	1/2"	3/4"	3/4"
Waste water connection	DN 40	DN 40	DN 40

REQUIRED SPACE

	BRA 900	BRA 1200	BRA 2500
Cleaning vibrator and drier	app. 3.2 m ²	app. 5.3 m ²	app. 9.8 m ²
Control panel and dosing unit	app. 0.6 m ²	app. 0.6 m ²	app. 0.6 m ²
Total	app. 3.8 m ²	app. 5.9 m ²	app. 10.4 m ²



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